

REMARKS

The Examiner is thanked for the performance of a thorough search. Claims 1, 3, 22, 26, 37, 47, 51, and 54 have been amended. Hence, Claims 1-56 are pending in the Application.

Each issue raised in the Office Action mailed July 14, 2003 is addressed hereinafter. It is respectfully submitted that the rejection of Claims 1-56 are over come for reasons given hereafter.

DRAWINGS

Formal drawings will be filed if the application is allowed or otherwise requested by the Examiner.

SUMMARY OF REJECTIONS

In the Office Action Claims 22-25, 47-50, and 53 are rejected under 35 U.S.C.(a) as being unpatentable over "An Open Agent Architecture" by Cohen.

Claims 1-5, 14-19, 26, 36-44, 51, 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over "An Open Agent Architecture" by Cohen in view of U.S. Patent No. 6,144,989 issued to *Hodjat*.

REJECTIONS UNDER 35 U.S.C. § 103(a)

CLAIMS 1, 26, 51 and 54

Claim 1 as amended recites, in part, the features:

“the facilitating engine further operable for generating a goal satisfaction plan associated with the base goal, wherein the goal satisfaction plan involves:
using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal.”

The Office Action implies that the “interpretation policy” in *Hodjat* is the equivalent of the “goal satisfaction plan” of applicants’ Claim 1 above. In Claim 1, the goal satisfaction plan involves “using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal and using said reasoning to coordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal”.

It is respectfully submitted that the “interpretation policy” in *Hodjat* is not a goal satisfaction plan as meant in applicants’ Claim 1. Rather, the “interpretation policy” in *Hodjat* merely refers to the registry of agent services or capabilities. In *Hodjat*, column 14, lines 15-16, “[a]gents need to register themselves with each other”, and in column 14, lines 26-29, the “[a]gents advertise their domains of responsibility in order to draw requests from other agents. When an agent receives an ADVERTISE message it, updates its interpretation policy so as to redirect certain requests to the advertising agent.” In other words, each agent advertises its capabilities, i.e., domain of responsibility through registration. Thus, it can be seen that *Hodjat*’s interpretation policy is merely a registry of agents capabilities or domains of responsibilities and is not a goal satisfaction plan that involves reasoning.

To explain, assume that one of the agents in *Hodjat* registers in the interpretation policy unit 322 as being able to roast coffee beans and another agent registers as being able to grind coffee beans. There is no mechanism in *Hodjat*’s interpretation policy that provides a plan that converts the request for making coffee to be decomposed into the sub-tasks of roasting coffee beans, grinding coffee beans and boiling water, etc. Further the reasoning of Claim 1 results in scheduling the roasting to occur before the grinding of the coffee beans. Rather, the interpretation policy unit 322 in *Hodjat* is

much more simplistic. For example, the “interpreter unit 320 refers to an interpretation policy 322 to determine whether the input message is within the domain of responsibility of the agent 310” (see column 7, lines 34-36). In other words, the interpreter unit 320 refers to an interpretation policy 322 to determine whether the input message is within the registered capabilities of the agent. Further, the “interpretation policy unit 322 can be, for example, a table containing various words or tokens in the message that the agent is assigned to recognize” (see column 7, lines 36-39). Thus, the interpretation policy involves a table look-up to match the agent’s capabilities with a given request. Clearly, there is no goal satisfaction plan involving any kind of reasoning. In *Hodjat*, there is no reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal as required in Claim 1.

Further, the Office Action states that “storing new interpretation policies by using the ‘IS-THIS-YOURS’ performative with returned response” is equivalent to the rules and learning algorithms of Claim 1. It is respectfully submitted that the use of the ‘IS-THIS-YOURS’ performative does not involve the type of reasoning as in Claim 1.

To explain, *Hodjat*’s ‘IS-THIS-YOURS’ performative is simply a mechanism to query each agent and its corresponding downchain communities to find out which agent “has an interpretation policy that applies to the request (see column 4, lines 47-55). Such a performative does not involve the type of reasoning of Claim 1 where the reasoning results in converting the request for making coffee to be decomposed into the sub-tasks of roasting coffee beans, grinding coffee beans and boiling water, etc.

In *Hodjat*, the 'IS-THIS-YOURS' performative would simply query the agents with the request "for make coffee." *Hodjat's* 'IS-THIS-YOURS' performative would have no way of reasoning that coffee beans need to be roasted and then ground and that water needs to be boiled to accomplish the goal of making coffee.

The Office Action further alludes to "adaptive learning " *Hodjat*. The adaptive learning in *Hodjat* is specifically for correcting faulty interpretation policies and is not at all related to the type of reasoning of Claim 1. For example, in *Hodjat*, when a message is interpreted erroneously, the TV agent 414 "passes the erroneously interpreted message on further to the designated downchain neighbor with the DISSATISFIED performative. This process continues until the correct leaf agent is reached and the desired action is taken (See column 17, lines 2-8). Such corrective action has nothing to do with the type of reasoning involved in Claim 1 where the request to make coffee involves reasoning that coffee beans need to be roasted and ground and that water needs to be boiled. The reasoning in Claim 1 is not a corrective action as in the adaptive learning of *Hodjat*.

In contrast, Claim 1 shows that the facilitating engine uses sophisticated reasoning when delegating sub-goal requests to best complete the requested service request. The facilitating engine's use of reasoning is supported by the specification on page 13, lines 342-347.

Assume that the facilitator agent of Claim 1 receives a request such as, "Make Coffee". The facilitator agent's facilitating engine uses reasoning to generate the following goal satisfaction plan:

Sub-goal request A: Roast coffee beans
Sub-goal request B: Grind coffee beans

Sub-goal request C: Boil water, etc.

The facilitating engine is able to use reasoning to accomplish the base goal, "Make Coffee". The reasoning includes "one or more of domain-independent coordination strategies, domain-specific reasoning, and application-specific reasoning comprising rules and learning algorithms." For example, the facilitating engine uses its domain-specific reasoning based on domain-specific knowledge of symbols and axioms of the domain. In the above example, the facilitating engine uses its knowledge about domain symbols and axioms such as "coffee", "roast", and "beans" in order to generate a goal satisfaction plan by reasoning that making coffee entails roasting coffee bean, grinding coffee beans and boiling water, etc. Also, the coffee beans need to be roasted before the coffee beans can be ground and that only after the coffee beans are ground should water be boiled.

Neither *Cohen* nor *Hodjat*, either alone or in combination, disclose, teach, suggest or make obvious the novel features of claim 1. Thus, Claim 1 is allowable.

Claims 26, 51 and 54, each contain similar features regarding "using reasoning to determine sub-goal requests based on non-syntactic decomposition of the base goal and using said reasoning to co-ordinate and schedule efforts by the service-providing electronic agents for fulfilling the sub-goal requests in a cooperative completion of the base goal." Thus, Claims 26, 51 and 54 are allowable for at least the reasons provided herein in respect to Claim 1.

CLAIMS 2-21, 27-46, 52, and 55-56

Claims 2-21 are either directly or indirectly dependent upon Claim 1 and include all the limitations of Claim 1 and therefore are allowable for at least the reasons provided herein in respect to Claim 1.

Claims 27-46 are either directly or indirectly dependent upon Claim 26 and include all the limitations of Claim 26 and therefore are allowable for at least the reasons provided herein in respect to Claim 26.

Claim 52 is directly dependent upon Claim 51 and includes all the limitations of Claim 51 and therefore is allowable for at least the reasons provided herein in respect to Claim 51.

Claims 55-56 are either directly or indirectly dependent upon Claim 54 and include all the limitations of Claim 54 and therefore are allowable for at least the reasons provided herein in respect to Claim 54.

CLAIMS 22, 47 and 53

Claim 22 as amended recites, in part, the feature:

“the facilitator agent being distinct from service-providing agents; and
at least one service-requesting agent capable of making a request directly to a service-providing agent as a peer to peer communication for accomplishment of at least one of the sub-goals”

The Office Action states that *Cohen* “teaches the originating agent is capable of directly communicating with a target agent (pg. 2).” It is respectfully submitted that *Cohen* does not teach that the originating agent is capable of directly communicating with a target agent, for the following reasons.

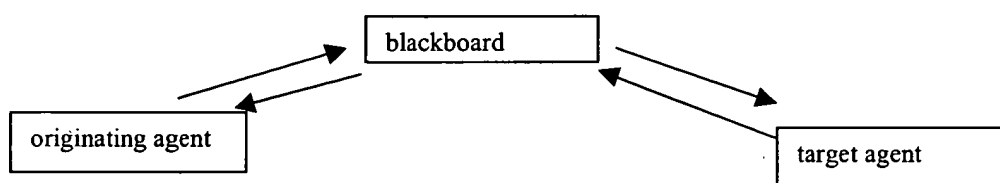
Cohen (see pg. 2, column 1, lines 19-21) states that “[c]ommunication can also take place in a **directed mode** if the originating agent specifies the identity of a target agent.” It is respectfully submitted that the Examiner may have misunderstood “directed mode” to mean direct communication.

“Directed mode” does **not** mean direct communication between the originating agent and the target agent. *Cohen* specifically states that all communication between

clients **must pass through the blackboard** (see pg. 2, column 1, lines 10-11). Thus, Cohen explicitly states that there is no peer to peer communication between the originating agent and the target agent.

The **directed mode** communication means that the originating agent specifies the identity of the target agent to the blackboard. Such a communication is said to be in a “directed mode” because the **originating agent is directing the blackboard, i.e., telling the blackboard** which target agent has the answer that the originating agent is looking for. The blackboard then goes to the identified target agent and retrieves the answer from the identified target agent. Next, the blackboard gives the retrieved answer to the originating agent. It is clear that there is no direct communication between the originating agent and the target agent. The originating agent is able to get the answer from the target agent by **passing through the blackboard**. Hence, there is no peer to peer communication.

The following diagram illustrates the “**directed mode**” in *Cohen*.



In the above diagram, the originating agent passes the identity of the target agent to the blackboard. The blackboard goes to the identified target agent and retrieves the answer. Then, the blackboard passes the retrieved answer to the originating agent.

In contrast to the “directed mode”, *Cohen* also describes the “**undirected mode**”. In the undirected mode, the originating agent does not know which target agent is capable of providing an answer. Thus, the originating agent merely posts a question on

the blackboard. It is up to the blackboard to find the answer. The blackboard is not given any direction (hence “undirected”) by the originating agent as to which target agent has the desired answer.

In *Cohen*, it is clear that both the directed mode and undirected mode implies passing communication through the blackboard.

Thus, *Cohen* does not disclose, teach, suggest or make obvious the novel feature, “the facilitator agent being distinct from service-providing agents, and at least one service-requesting agent capable of making a request directly to a service-providing agent as a peer to peer communication for accomplishment of at least one of the sub-goals” of Claim 22. Thus, Claim 22 is allowable.

Claims 47 and 53, each contain similar features regarding peer to peer communications between client agents. Thus, Claims 47 and 53 are allowable for at least the reasons provided herein in respect to Claim 22.

CLAIMS 23-25, 48-50

Claims 23-25 are either directly or indirectly dependent upon Claim 22 and include all the limitations of Claim 22 and therefore are allowable for at least the reasons provided herein in respect to Claim 22.

Claims 48-50 are either directly or indirectly dependent upon Claim 47 and include all the limitations of Claim 47 and therefore are allowable for at least the reasons provided herein in respect to Claim 47.

CONCLUSION

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 838-4311.

The Commissioner is authorized to charge any fees due to Applicant's Deposit Account No. 50-2207.

Respectfully submitted,
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